CLAIMS

1. A physical vapor deposition (PVD) component forming method comprising inducing a sufficient amount of stress in the component to increase magnetic pass through flux exhibited by the component compared to pass through flux exhibited prior to inducing the stress.

2. The method of claim 1 wherein the inducing a sufficient amount of stress comprises cold working to a reduction in cross-sectional area between about 5% to about 15%.

3. The method of claim 1 further comprising orienting a majority crystallographic structure of the component at (200) prior to inducing the stress, wherein the induced stress alone is not sufficient to substantially alter surface grain appearance.

4. The method of claim 3 wherein the orienting the majority crystallographic structure comprises cold working a component blank to at least about an 80% reduction in cross-sectional area followed by heat treating at least at about a minimum recrystallization temperature of the component blank.

5. The method of claim 4 wherein the reduction in cross-sectional area is at least about 85%.

6. The method of claim 1 wherein the component exhibits a (200) texture over at least about 50% of a surface area at least within selected boundaries.

7. The method of claim 1 wherein the component exhibits an average grain size of less than 50 microns.

8. The method of claim 1 wherein the component consists essentially of a material having a face-centered cubic crystalline structure.

9. The method of claim 1 wherein the component consists essentially of nickel.

10. A PVD component forming method comprising:

first cold working a component blank to at least about an 80% reduction in cross-sectional area;

heat treating the cold worked component blank at least at about a minimum recrystallization temperature of the component blank; and

second cold working the heat treated component blank to a reduction in cross-sectional area between about 5% to about 15% of the heat treated component.

11. The method of claim 10 wherein the second cold worked component blank exhibits a (200) texture over at least about 50% of a surface area at least within selected boundaries.

12. The method of claim 11 wherein the second cold worked component blank exhibits a (200) texture over at least about 70% of the surface area.

13. The method of claim 10 wherein at least one of the first and second cold working comprises cold rolling.

14. The method of claim 10 wherein the component blank comprises a sputter target blank.

15. The method of claim 10 wherein the component blank consists essentially of nickel.

16. The method of claim 10 wherein the first and second cold working occur at about 20 °C (68 °F).

17. The method of claim 10 wherein at least one of the first and second cold working is unidirectional.

18. The method of claim 10 wherein the first and second cold working are both unidirectional and each in a same direction.

19. The method of claim 10 wherein the heat treating comprises:

substantially uniformly heating the cold worked component blank at least to the minimum recrystallization temperature in less than about 60 minutes; and

maintaining the cold worked component blank at least at the minimum recrystallization temperature for less than about 60 minutes.

20. The method of claim 10 wherein the heat treating is performed with a fluidized bed furnace.

21. The method of claim 10 wherein the heat treating occurs between about 371 °C (700 °F) to about 649 °C (1200 °F).

22. The method of claim 21 wherein the heat treating occurs between about 427 °C (800 °F) to about 482 °C (900 °F).

23. The method of claim 10 wherein the second cold working reduction in cross-sectional area is about 10%.

24. A sputter component forming method comprising:

unidirectionally first cold working a component blank to at least about an 80% reduction in cross-sectional area;

heat treating the cold worked component blank at least at about a minimum recrystallization temperature of the component blank; and

inducing a sufficient amount of stress in the heat treated component to increase magnetic pass through flux exhibited by the heat treated component compared to pass through flux exhibited prior to inducing the stress.

25. The method of claim 24 wherein inducing the stress comprises unidirectionally second cold working the heat treated component blank to a reduction in cross-sectional area between about 5% to about 15% of the heat treated component.

26. A sputter target forming method comprising:

unidirectionally first cold rolling a target blank consisting essentially of nickel to at least about an 85% reduction in cross-sectional area;

heat treating the cold rolled target blank at a temperature between about 427 °C (800 °F) to about 482 °C (900 °F) for less than about 60 minutes; and

second cold rolling the heat treated target blank to a reduction in cross-sectional area of about 10% of the heat treated component, at least about 70% of a surface area at least within selected boundaries of a surface of the second cold rolled target blank exhibiting a (200) texture.

27. A magnetic flux enhancement method for a sputter component comprising combining unidirectional cold working of a sputter component with heat treatment at least at about a minimum recrystallization temperature and orienting predominate crystallographic structure preferentially at (200) followed by additional unidirectional cold working in a same direction as initially cold worked.

Sub A1

28. A PVD component produced by the method of claim 1.

29. A sputter component produced by the method of claim 24.

30. A sputter target produced by the method of claim 26.

Sub C1

31. A PVD component consisting essentially of nickel exhibiting a (200) texture over at least about 50% of a surface area at least within selected boundaries and having a sufficient amount of residual stress to exhibit higher magnetic pass through flux compared to pass through flux exhibited absent such stress.

32. The component of claim 31 wherein the selected boundaries define a representative test area.

33. The component of claim 31 wherein the metal exhibits an average grain size of less than about 50 microns.

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